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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/438,184	11/11/1999	RON MCCABE	1735.2.2	8995
20575 7590 07/13/2007 MARGER JOHNSON & MCCOLLOM, P.C. 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			EXAMINER REILLY, SEAN M	
			ART UNIT 2153	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/438,184

Applicant(s)

MCCABE ET AL.

Examiner

Sean Reilly

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 110-129 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 110-129 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This Office action is in response to Applicant's amendment and request for reconsideration filed on December 7, 2006. All previously pending claims have been canceled. New claims 110-129 are added.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 110-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Off-Site Server product as described in Applicant's admitted prior art and the Staheli et al. reference (U.S. Patent Number 5,537,533; hereinafter Staheli) and Cabrera et al. (U.S. Patent Number 6,453,325; hereinafter Cabrera).

With regard to claims 110-112, Applicant's admitted prior art disclosed a system for storing data comprising:

- ❑ an interface configured to receive a plurality of data changes, the data changes indicating a change in data stored on storage volume of a host (remote server or mirror, Applicant's specification pg 3 or Staheli Col 5, lines 25-35);
- ❑ a meta-data block generator configured to generate a plurality of meta-data blocks, each meta-data block associated with at least one of the data changes

(Staheli fig.2 link interface 34, col.11 line 60 to col.12 line 30, fig.3 ‘calculate check sum and header for a block of data’);

- a local buffer configured to store the data changes and the meta-data blocks
(Applicant’s specification pg 2, 3rd ¶ or Staheli Col 12, lines 15-30).

Applicant’s admitted prior art disclosed the invention substantially as claimed however Applicant’s admitted prior art failed to specifically recite the meta-data indicating a time that data changes associated with the meta-data blocks were made on the storage volume relative to the data changes. In a similar data backup system Cabrera disclosed storing snapshot backups with distinguishing information that distinguishes a particular backup from each other backup on the basis of some chronological mark, such as a timestamp or a log sequence number (Cabrera Col 18, lines 44-54). Thus, it would have been obvious to one of ordinary skill in the art to include Cabrera’s chronological meta-data in Applicant’s admitted prior art system, so that the system would know the chronological order of backups and thus be able to properly determine the particular backups to use when restoring a system. For instance a user may wish to restore the system to its last known proper working state, which may be several backups prior (Cabrera snapshot backups “point-in-time” recovery Col 18, lines 55-64).

With regard to claims 113-115, Applicant’s admitted prior art disclosed monitoring the link and acting accordingly, e.g. ceases transmission during link downtime or changing its bandwidth on the fly as the available bandwidth fluctuates (Applicant’s Specification pg 3, 2nd full ¶).

With regard to claim 116, Applicant’s admitted prior art and Cabrera disclosed:

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- ❑ a communications link coupled to the local buffer (Applicant's specification pg 2, 3rd ¶ or Staheli Col 12, lines 15-30);
- ❑ a remote buffer coupled to the communication link and configured to receive and store the data changes and the associated meta-data block from the local buffer (remote server or mirror, Applicant's specification pg 3 or Staheli Col 5, lines 25-35); and
- ❑ a remote mirror including all of the data stored on the storage volume at a current point in time (remote mirror, Applicant's specification pg 3 or Staheli Col 5, lines 25-35);
- ❑ a snapshot, wherein the snapshot includes all data of the storage volume at an associated point in time (Cabrera, Col 18, lines 44-64);
- ❑ wherein the remote buffer is configured to independently update the snapshot and the remote mirror using the data changes (remote server or mirror, Applicant's specification pg 3 or Staheli Col 5, lines 25-35).

With regard to claims 117 and 125, Applicant's admitted prior art failed to specifically recite that the remote buffer is configured to store in the snapshot an oldest data change of the data changes stored in the remote buffer according to the associated meta-data block.

Nonetheless, the entire point of Cabrera's meta-data information is to provide distinguishing information that distinguishes a particular backup from each other backup on the basis of some chronological mark. Furthermore it is widely known in the art at the time of Applicant's invention to store data in chronological order since this is most likely the order the information would have to be accessed in. Thus, it would have been obvious to one of ordinary skill in the

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art at the time of Applicant's invention to store the backup data according to chronological order (i.e. an order indicated by the associated meta-data blocks) in order to provide easier and faster access to the backup data. Applicant's admitted prior art failed to specifically recite removing the oldest data change from the remote buffer. Nonetheless it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to delete the oldest data as it becomes stale, in order to free up system resources for new backup updates.

With regard to claim 118, Cabrera disclosed a volume reconstructor configured to generate data of the storage volume from a previous point in time from the snapshot, and at least one of the data changes and the meta-data blocks associated with the at least one data change (Cabrera, Col 18, lines 44-64 "point-in-time recovery).

With regard to claim 119, Applicant's admitted prior art disclosed:

- a communications link coupled to the local buffer (Applicant's specification pg 2, 3rd ¶ or Staheli Col 12, lines 15-30);
- a remote buffer coupled to the communication link and configured to receive and store the data changes and the associated meta-data block from the local buffer (remote server or mirror, Applicant's specification pg 3 or Staheli Col 5, lines 25-35); and
- wherein the local buffer is configured to maintain a particular data change in the local buffer until after an acknowledgement indicating that the particular data change was stored in the remote buffer is received by the local buffer (Applicant's specification pg 2).

With regard to claim 120, Applicant's admitted prior art disclosed a local mirror configured to store the data changes and including all of the data stored on the storage volume at a point in time (Applicant's specification pg 2, 3rd ¶ or Staheli Col 12, lines 15-30);

wherein the interface is further configured to transmit the data changes to the local buffer and the local mirror (Applicant's specification pg 2, 3rd ¶).

With regard to claims 121-123, Applicant's admitted prior art disclosed the local buffer is configured to remove the particular data from the local buffer when a signature associated with the particular data change and received by the local buffer is acknowledged or validated (acknowledgement is received at the local buffer, Applicant's specification pg 2, 3rd ¶).

With regard to claim 124, Applicant's admitted prior art failed to specifically recite that the signature is a checksum. Nonetheless, it is widely known in the art at the time of Applicant's invention to verify the transfer of data over a network using a checksum. Thus, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to use a checksum signature in Applicant's admitted prior art system to confirm that the backup data was correctly sent and received before deleting the data, in order to help ensure that the data is not lost before being properly sent and received.

With regard to claim 126, Applicant's admitted prior art failed to disclose a plurality of mirroring units that are in turn mirrored by other mirroring units. Nonetheless, it was widely known in the art at the time of Applicant's invention that increasing redundancy in a system increases the reliability in the system. Thus, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Applicant's admitted prior art system to include any number of mirroring units wherein the mirrored units are also mirrored by any

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number of mirroring units, in order to archive the desired level of reliability in the system. A high level of redundancy systems would be particular useful in hostile environments such as high-risk hurricane areas or military command posts.

With regard to claim 127, Applicant's admitted prior art disclosed the second mirroring unit locks access to a mirror of a mirrored primary storage volume in response to an access by an associated first mirroring unit (pg 4, 2nd ¶; each server can only mirror a single server at a given time).

With regard to claims 128-129, Examiner takes official notice that it was widely known in the art at the time of Applicant's invention to access remotely stored data via a web browser plug-in, e.g. an FTP client plug-in. Thus, it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to provide users access to the mirror data servers through a web browser plug-in since a web interface provides a familiar easy point and click for the users to access stored data.

Conclusion

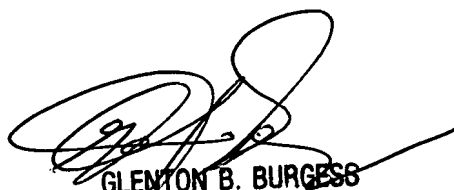
2. The prior art made of record, in PTO-892 form, and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Reilly whose telephone number is 571-272-4228. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glen Burgess can be reached on 571-272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 5, 2007


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